

AMENDMENTS TO THE CLAIMS

Claim 1 (Original) A waste liquid regeneration apparatus for a printer, characterized in that

said liquid regeneration apparatus comprises:

a vessel into which waste liquid containing ink pigment, water and cleaning fluid used in said printer is supplied;

a metal electrode plate disposed in said vessel for partitioning the inside of said vessel into a first chamber and a second chamber and for allowing the waste liquid to flow therethrough;

a high-voltage power supply for applying a voltage to said metal electrode plate; and

a grounding electrode connected to said first chamber.

Claim 2 (Original) The waste liquid regeneration apparatus for a printer as set forth in claim 1, characterized in that

one or a plurality of additional metal electrode plates for allowing the waste liquid to flow therethrough are provided in a juxtaposed and spaced relationship with from each other in said second chamber such that each of said metal electrode plates partitions said second chamber, and that

said high-voltage power supply is connected to each of said metal electrode plates including said metal electrode plate which partitions the inside of said vessel into said first chamber and second chamber.

Claim 3 (Original) The waste liquid regeneration apparatus for a printer as set forth in claim 2, characterized in that a higher voltage is applied to any of said metal electrode plates as the distance from said grounding electrode to the metal electrode plate increases.

Claim 4 (Currently Amended) The waste liquid regeneration apparatus for a printer as set forth in ~~any one of claims 2 and 3~~ claim 2, characterized in that a voltage is applied to each of said metal electrode plates from a corresponding one of the high-voltage power supplies such that a higher field intensity is generated by the metal

electrode plate as the distance from said grounding electrode to the metal electrode plate decreases.

Claim 5 (Currently Amended) The waste liquid regeneration apparatus for a printer as set forth in claim 1-~~or~~2, characterized in that

a waste liquid supplying pipe for supplying the waste liquid is connected to said first chamber, and that

a cleaning fluid recovering pipe for recovering the regenerated cleaning fluid is connected to said second chamber.

Claim 6 (Original) The waste liquid regeneration apparatus for a printer as set forth in claim 5, characterized in that

said waste liquid supplying pipe and said cleaning fluid recovering pipe are connected to a blanket drum cleaning apparatus for cleaning a blanket drum of said printer, and that

the waste liquid discharged from said blanket drum cleaning apparatus is supplied to said first chamber through said waste liquid supplying pipe and the cleaning fluid regenerated in said second chamber is recovered by said blanket drum cleaning apparatus through said cleaning fluid recovering pipe.

Claim 7 (Currently Amended) The waste liquid regeneration apparatus for a printer as set forth in claim 1-~~or~~2, characterized in that a reservation section for settling the water separated from the waste liquid and reserving the water is provided at a lower portion of said first chamber.

Claim 8 (Currently Amended) The waste liquid regeneration apparatus for a printer as set forth in claim 1-~~or~~2, characterized in that

said grounding electrode is disposed substantially horizontally at a lower portion of the inside of said vessel, and that

said metal electrode plate or plates are disposed substantially horizontally above said grounding electrode in said vessel.

Claim 9 (Original) The waste liquid regeneration apparatus of a printer as set forth in claim 8, characterized in that

a partition wall is disposed in the proximity of a first side wall of the inside of said vessel, that

said metal electrode plate or plates are disposed between a second side wall opposing to the first side wall of the inside of said vessel and said partition wall, that

said waste liquid supplying pipe for supplying the waste liquid is connected to a region defined by said partition wall and said first side wall, and that

said cleaning fluid recovering pipe for recovering the regenerated cleaning fluid is connected to another region surrounded by said metal electrode plate or plates, said second side wall and said partition wall.

Claim 10 (Currently Amended) The waste liquid regeneration apparatus for a printer as set forth in claim 1-~~or~~2, characterized in that said metal electrode plate or plates are a wire mesh type metal electrode plates.

Claim 11 (Currently Amended) The waste liquid regeneration apparatus for a printer as set forth in claim 1-~~or~~2, characterized in that said waste liquid regeneration apparatus for a printer further comprises a scraping plate for scraping off ink pigment agglomerated on and adhering to said grounding electrode to remove the ink pigment from said grounding electrode.

Claim 12 (Currently Amended) The waste liquid regeneration apparatus for a printer as set forth in claim 1-~~or~~2, characterized in that said grounding electrode is mounted for extraction to the outside of said vessel.

Claim 13 (Currently Amended) The waste liquid regeneration apparatus for a printer as set forth in claim 1-~~or~~2, characterized in that

said grounding electrode is formed as a metal sheet which can be taken up in a coiled form, and that

said waste liquid regeneration apparatus for a printer further comprises:

a delivering apparatus disposed outside said vessel for delivering said metal sheet,
and

a take-up apparatus provided outside said vessel for taking up said metal sheet
after said metal sheet is delivered from said delivering apparatus and used in said vessel.

Claim 14 (Currently Amended) The waste liquid regeneration apparatus for a
printer as set forth in claim 1-~~or~~2, characterized in that said waste liquid regeneration
apparatus for a printer further comprises:

thin paper in the form of a roll for covering a surface of said grounding electrode;
a delivering apparatus disposed outside said vessel for delivering said thin paper,
and

a take-up apparatus disposed outside said vessel for taking up said thin paper after
said thin paper is delivered from said delivering apparatus and used in said vessel.

Claim 15 (Currently Amended) The waste liquid regeneration apparatus for a
printer as set forth in claim 1-~~or~~2, characterized in that

said grounding electrode is formed as a rotatable metal bar having a cylindrical
shape, and that

said metal electrode plate or plates are formed in a cylindrical shape so as to
surround the outside of said grounding electrode.

Claim 16 (Original) The waste liquid regeneration apparatus for a printer as set forth in
claim 15, characterized in that the waste liquid regeneration apparatus for a printer further
comprises a blade provided in sliding contact with said metal bar for scraping off ink
pigment adhering to the outside surface of said metal bar.

Claim 17 (Currently Amended) The waste liquid regeneration apparatus for a
printer as set forth in claim 1-~~or~~2, characterized in that

said grounding electrode is formed as a rotatable metal disc, and that
a blade is provided in sliding contact with said metal disc for scraping off the ink
pigment adhering to the outside surface of said metal disc.

Claim 18 (Currently Amended) The waste liquid regeneration apparatus for a printer as set forth in claim 1-~~or~~2, characterized in that
said grounding electrode is formed as an endless metal sheet, and
said waste liquid regeneration apparatus for a printer further comprises:
a driving apparatus for driving said endless metal sheet to rotate; and
a blade provided in sliding contact with said endless metal sheet for scraping off the ink pigment adhering to the outside surface of said metal sheet.

Claim 19 (Currently Amended) The waste liquid regeneration apparatus for a printer as set forth in claim 1-~~or~~2, characterized in that said grounding electrode is formed from an electrically-conductive protuberance or a network-like metal member.

Claim 20 (Original) The waste liquid regeneration apparatus for a printer as set forth in claim 19, characterized in that said waste liquid regeneration apparatus for a printer further comprises an ultrasonic oscillation apparatus for applying oscillation to said grounding electrode to re-dissolve the ink pigment adhering to said grounding electrode into the cleaning fluid.

Claim 21 (Currently Amended) The waste liquid regeneration apparatus for a printer as set forth in claim 1-~~or~~2, characterized in that
said metal electrode plate or plates are disposed horizontally or substantially horizontally in said vessel to form said first chamber below said second chamber, that
a third chamber for reserving the water below said first chamber is provided in a spaced relationship from said metal electrode plate or plates, and that
said grounding electrode is connected to said third chamber.

Claim 22 (Original) The waste liquid regeneration apparatus for a printer as set forth in claim 21, characterized in that
a waste liquid supplying pipe for supplying the waste liquid is connected to said first chamber, that

a cleaning fluid recovering pipe for recovering the regenerated cleaning fluid is connected to said second chamber, that

a regenerated water recovering pipe for recovering the regenerated water is connected to a portion higher than a bottom portion in said third chamber, and that

a remaining liquid recovering pipe for recovering remaining liquid in said vessel is connected to the bottom of said third chamber.

Claim 23 (Original) The waste liquid regeneration apparatus for a printer as set forth in claim 22, characterized in that said waste liquid regeneration apparatus for a printer further comprises a returning flow path for returning at least one of the regenerated cleaning fluid, regenerated water and remaining liquid recovered through said cleaning fluid recovering pipe, said regenerated water recovering pipe and said remaining liquid recovering pipe.

Claim 24 (Original) The waste liquid regeneration apparatus for a printer as set forth in claim 21, characterized in that said third chamber is formed in a funnel-shape.

Claim 25 (Original) The waste liquid regeneration apparatus for a printer as set forth in claim 24, characterized in that said third chamber has an inner face soil release processed for preventing adhering of the ink pigment thereto.

Claim 26 (Original) The waste liquid regeneration apparatus for a printer as set forth in claim 21, characterized in that

said waste liquid regeneration apparatus for a printer further comprises a waste liquid supplying apparatus for supplying the waste liquid to said first chamber, and that

said waste liquid supplying apparatus is configured so as to allow operation thereof in accordance with an intermittent supplying method wherein supply of the waste liquid and stopping of the supply are performed alternately.

Claim 27 (Original) The waste liquid regeneration apparatus for a printer as set forth in claim 26, characterized in that said waste liquid regeneration apparatus for a printer further comprises:

a first detection apparatus for detecting a physical amount correlated with the concentration of the ink pigment in the regenerated cleaning fluid separated from the waste liquid in said first chamber and recovered into said second chamber or a physical amount correlated with the concentration of the ink pigment in the regenerated cleaning fluid; and

a control apparatus for controlling at least one of a supplying rate, supplying time and stopping time of the waste liquid by said waste liquid supplying apparatus in response to a result of the detection of said first detection apparatus so that the concentration of the ink pigment in the regenerated cleaning fluid may remain within a predetermined control range.

Claim 28 (Original) The waste liquid regeneration apparatus for a printer as set forth in claim 26, characterized in that said waste liquid supplying apparatus further allows operation thereof in accordance with a continuous supplying method wherein the waste liquid is supplied continuously and is configured for changing over between the intermittent supplying method and the continuous supplying method.

Claim 29 (Original) The waste liquid regeneration apparatus for a printer as set forth in claim 28, characterized in that said waste liquid regeneration apparatus for a printer further comprises:

a second detection apparatus for detecting a physical amount correlated with the concentration of the water in the waste liquid supplied into said first chamber by said waste liquid supplying apparatus or a physical amount correlated with the concentration of the water in the waste liquid; and

a changeover apparatus for changing over the waste liquid supplying method of said waste liquid supplying apparatus in response to a result of the detection of said second detection apparatus such that, when the concentration of the water in the waste liquid is within a predetermined range, said waste liquid supplying apparatus is operated

in accordance with the intermittent supplying method, but when the concentration of the water in the waste liquid is outside the predetermined range, said waste liquid supplying apparatus is operated in accordance with the continuous supplying method.

Claim 30 (Original) A waste liquid regeneration method for regenerating waste liquid containing ink pigment, water and cleaning fluid used in a printer, characterized in that an electrostatic field is generated in the waste liquid such that the water and the ink pigment are electrostatically agglomerated from within the waste liquid making use of electrophoresis of the ink pigment by the electrostatic field to separate the waste liquid into the cleaning fluid, water and ink pigment.